

Recidivism among male insanity acquittees

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Although there have been studies of the relative criminal recidivism rates of insanity acquittees and of those of persons found guilty of similar offenses, little is known about whether the same factors are related to recidivism in both groups. In the present study, we compared the general and violent recidivism rates of insanity acquittees and convicted men who had been assessed in a maximum security psychiatric hospital prior to their trials. The groups were matched on age, offense and criminal history. Recidivism for the convicted group was found to be higher than for the insanity acquittees. Similar to the findings for the convicted men, subject characteristics that reflected past criminal and antisocial behavior were more closely related to outcome for the insanity acquittees than were clinical variables. Furthermore, multiple discriminant equations to predict recidivism were constructed for each group separately, and they performed well on cross-validations using the other group. The results are discussed in terms of their implications for policy and treatment planning for mentally disordered offenders.

AUTHORS' NOTE. Thanks are due to C. Cormier, L. Koeshkerian, S. Robinson, and C. MacKnight for assistance in gathering the data and to V. Quinsey for helpful comments on an earlier draft of this paper. The research reported in this paper was funded through the Ontario Ministry of Health Research Grant 01677.

The defense plea of insanity is based on the idea that the criminal behavior of those acquitted due to insanity is caused by a mental disorder, whereas the same behavior from an offender found guilty is due to criminogenic factors. If it is true that the causal factors differ in the offenses of insanity acquittees and convicted offenders, then it follows that factors that predict recidivism in the two groups ought to be different. For example, while such factors as age and criminal history have consistently been found to be important for predicting recidivism among convicted persons,¹ such psychiatric factors as diagnosis, psychiatric history, and symptom severity ought to be important in predicting recidivism among insanity acquittees.

Evidence on this issue has been mixed. For example, while age and criminal history variables have consistently been found to be related to criminal recidivism among insanity acquittees and other mentally disordered offenders, in most studies it has also been found that psychiatric variables are important. In a review of followup studies of mentally disordered offenders in Special Hospitals in Britain,² Bowden concluded that in addition to age and criminal history, previous admissions to psychiatric hospitals and diagnosis were associated with criminal recidivism. Other studies of insanity acquittees have most consistently found age and offense history to be related to recidivism.³ Psychiatric variables have less commonly been found to be related to subsequent criminal recidivism, although diagnosis was found to be an important predictor in all but one study in which it was examined.⁴ Furthermore, a diagnosis commonly found to be related to subsequent recidivism is that of personality (usually antisocial) disorder,⁵ although a psychotic diagnosis⁶ and mental retardation⁷ have also been associated with higher recidivism. The finding that antisocial personality disorder is related to recidivism is problematic, because criminal behavior is one of the symptoms of the disorder; therefore it is unclear (in the absence of controls for criminal history) whether diagnosis

contributes anything more to the prediction of recidivism than does criminal history alone.

A second implication of the idea that the criminal behavior of insanity acquittees is caused by factors stemming from a mental disorder, whereas the same behavior from a convicted offender is due to criminogenic factors, is that when treatment is provided and signs of mental disorder are diminished, the criminal recidivism of insanity acquittees ought to be reduced. Thus, we might expect a lower recidivism rate among insanity acquittees (virtually all of whom receive treatment before release) than among convicted offenders with similar criminal histories. There have been a few studies⁸ in which the outcomes of insanity acquittees who had been treated and released were compared with the outcomes of matched felons arrested or convicted for similar offenses. In all cases the recidivism rates of the two groups were very similar. In a review of the available American studies,⁹ Pasewark concluded that the data were discouraging for mental health professionals, noting that studies had found that psychiatric hospitalization was not particularly beneficial in reducing recidivism. However, in none of those studies were diagnoses available for the prison samples, and it may be that treatment reduces the recidivism for at least the more seriously mentally ill.

In the present study, we examined the long-term recidivism rates of a large group of insanity acquittees and compared them with those of a group of convicted men. The comparison subjects were matched to the experimental group on index offense (arrest offense was used to avoid the problems of plea bargaining, which may be more prevalent among convicted offenders than among insanity acquittees¹⁰), offense history, and age. In addition to a comparison of the overall recidivism rates between the two groups, data were gathered for both groups on a large number of variables having to do with childhood history, criminal history, and social and psychiatric factors in order to permit a comparison of the variables predicting recidivism in the two groups. Also, to provide an even

stronger test of the hypothesis that the same (criminological) variables would predict recidivism in both groups, the matched group of offenders was used to construct a linear model of recidivism, and the accuracy of that model was tested with the insanity acquittees. Because risk-prediction instruments designed for criminal samples have been found to improve upon predictions made from variables considered singly," we included one of the more promising of these instruments, the Level of Supervision Inventory.¹²

Recidivism was measured in two ways. In one set of analyses, it referred all those who were readmitted to a maximum security psychiatric hospital for any reason or who were rearrested for any offense. In another set of analyses, recidivism included only arrests for a violent offense or readmission to a maximum security institution for having committed a violent act. Although more sophisticated methods of measuring recidivism have been developed for correctional populations, simple dichotomies of antisocial behavior have been found to fare equally well in terms of predictability.¹³ The importance of looking at violent failure has been emphasized by several investigators,¹⁴ as has the importance of looking at rehospitalizations for offenses that, had they been committed by someone without a psychiatric label, would likely have led to criminal arrest and incarceration.¹⁵

The time at risk is another factor that has been related to future recidivism.¹⁶ In most studies, short followup periods have been used, because reoffenses have been assumed to occur fairly shortly after release.¹⁷ While some studies that have used very long followup periods have found that the majority of offenses do occur early, especially for younger offenders,¹⁸ others have found that offenses for some groups of offenders continue at fairly stable rates for very long periods of time.¹⁹ A long followup period (an average of over six years) was used in the present study in order to gather comprehensive data regarding recidivism and to examine the time course of recidivism.

Method

Subjects and setting The subjects were an exhaustive sample ($n = 280$) of all NGRI patients present in the maximum security institution for at least one day over a seven-year period (January 1, 1975, to December 31, 1981). A yoked comparison group was formed by culling the records of patients admitted to the same institution during the same period for brief pretrial psychiatric assessments. A comparison subject was acceptable only if he met all of the following criteria: (a) his original most serious criminal charge for the index offense was the same as that of the experimental subject; (b) his criminal offense history on the Akman-Normandeau Scale² was within 20% of that for the NGRI subject for violent and nonviolent offenses separately; (c) he was the same age within one year; (d) his index offense and that of the NGRI subject occurred within 12 months of each other; and (e) he never returned to the institution for treatment. The numbers of patients admitted to the institution for pretrial remand remained high throughout the seven-year study period, and matches were obtained for 86% of the NGRI subjects ($n = 238$). Comparisons not reported here showed that the NGRI subjects who were successfully matched did not differ from those who were not matched.

During the seven-year period of the study, the all-male maximum security institution was divided into administratively and clinically separate units. The programs on these two units remained substantially unaltered throughout this period and have been well described elsewhere.³ Briefly, the program on one unit was a peer-operated therapeutic community that recruited young, verbal and intelligent patients. This program involved intensive long-term, insight-oriented group therapy. Patients who were not suitable for the therapeutic community program because they were dull, older, flagrantly psychotic or non-English-speaking were placed in the other unit, where the programs were operated on a behavioral model and almost all patients participated in a simple token economy. Material rewards and privileges were made contingent upon ward staff assessments of ward chores, workshop performance, cleanliness, cooperation, being in a good mood, and

making social contact. Tokens were also removed for problem behaviors ranging from assault and noncompliance to causing a nuisance.

Of the 516 insanity acquittees and comparison subjects, almost all (253 and 210, respectively) were at risk to reoffend or had reoffended at the time of the final followup (April 1988). Subjects were deemed to be at risk to recidivate when they had regular unsupervised leaves of absence from a correctional or psychiatric facility, when they were released from a maximum or medium security hospital to an open psychiatric facility, or when they were released to the street.

Procedure A list of all independent variables is shown in Table 1. All variables except for those pertaining to outcome were coded from institutional files. These institutional files were exceptionally complete and included information from a variety of sources (detailed psychosocial histories, information from other institutions, police reports, psychological test reports, questionnaires from patients' families, etc.). These detailed files have been employed by other researchers in several studies,²² but all variables were newly coded for this study. Outcome data were obtained from a variety of sources, including the files of the Coroner's Office, the Lieutenant Governor's Review Board, the Royal Canadian Mounted Police (a national database including INTERPOL reports), the National Parole Service of Canada, and provincial correctional and parole systems. A randomly chosen 20 subjects were independently coded by two research assistants to permit an evaluation of interrater reliability. It should be noted that the variables pertaining to diagnosis were coded by the research assistants using DSM-III criteria applied to file information available at the time of each subject's admission and did not necessarily reflect the diagnosis the patient received from institutional clinicians.

Outcome variables General recidivism was defined as any new charge for a criminal offense, or being returned to the maximum security institution or having one's parole revoked for any behavior that could have resulted in such a charge. Violent recidivism was

defined in the same way, with the proviso that the criminal charge or behavior resulting in return to maximum security or in parole revocation was against another person. In order to prevent inadvertent contamination of the history variables by raters' knowledge of recidivism, childhood history, adult adjustment, offense and assessment variables were coded using only file information that was available at the time the subject was first admitted. Recidivism data were gathered by a separate team of raters only after all other variables were coded.

Results

Interrater reliability

For continuous variables, mean Pearson correlation coefficients were computed and the reliability criterion was set at .70. Variables not meeting this criterion were dropped from the study, with the exception of childhood aggression ($r = .68, p < .01$). Agreement for categorical variables was assessed by the kappa statistic and percent agreement, and the reliability criteria were .70 and 80%, respectively. For all variables retained, mean correlation coefficients, kappa statistics, and percent agreement were .90, .83, and 87%, respectively.

Initial comparability of groups

The yoking procedure produced two very comparable groups that were alike not only on the matching variables but on most other study variables as well. In addition, the direction of the statistically significant differences (after the application of a standard Bonferroni correction, $\alpha = .05/49 = .001$) does not lead to a clear expectation about differential recidivism. Of the 49 study variables, the two groups differed on only six. Thus the NGRI subjects had more psychiatric admissions (1.95 vs. .76, $t(474) = 5.41, p < .0001$) and greater assertion deficits (2.62 vs. 1.91, $t(425) = 3.99, p < .0001$). In addition, the insanity acquittees were rated as having less serious problems with alcohol on several variables (parental alcohol problems, $p < .0005$, and alcohol involvement in the index offense; $p < .0001$). Finally, the insanity acquittees were more likely to meet the DSM-III cri-

TABLE 1^a
Study variables and their relationship to recidivism for all subjects

	Insanity Acquittees (n=253)			Convicted Comparisons (n=210)		
	Recidivist	Not	t/ ^b	Recidivist	Not	t/ ^b
Childhood History						
Years of Education ^c	8.87(2.31)	9.30(2.68)	-	8.17(2.53)	8.87(2.44)	2.04
School related justice ^{a,d}	2.21(1.28)	1.54(.96)	4.61	2.30(1.24)	1.48(.92)	5.05
Teen alcohol abuse ^{a,b}	1.39(1.08)	.96(.77)	3.31	1.74(.97)	1.26(.85)	3.63
Socioeconomic status ^c	2.68(1.62)	3.19(1.58)	2.22	3.15(1.38)	3.07(1.52)	-
Behavior problems ^d	2.50(1.65)	1.88(1.28)	-	2.46(2.32)	1.13(1.63)	4.62
Aggression score ^{a,f}	2.59(1.90)	2.04(1.68)	2.31	1.98(1.97)	1.92(1.57)	4.05
Ever suspended, expelled (%) ^{a,+}	20	9	5.92	22	11	4.28
Arrested under age 16 (%) ^{a,+}	31	11	15.03	34	12	13.10
Separated from parents (%) ^{a,+c}	49	24	16.60	45	23	11.57
Parental crime (%) ^a	14	3	10.15	11	6	-
Parental alcohol abuse (%) ^a	41	23	8.31	56	46	-
Parental psychiatric problem (%)	19	11	-	14	12	-
Adult Adjustment						
Longest employment (mos) ^{a,+}	25.4(36.3)	81.6(1.37)	3.94	50.6(105)	75.2(90.3)	-
Times in corrections ^{a,+}	1.39(2.04)	.59(1.78)	3.30	1.42(2.08)	.44(1.24)	4.06
Psychiatric admissions	1.88(2.67)	1.74(2.78)	-	.65(1.68)	.93(2.32)	-
Previous criminal charges ^a	7.32(12.2)	2.89(5.68)	1.88	7.42(12.0)	4.27(11.7)	1.93
Alcohol abuse ^{a,b}	1.86(1.14)	1.45(1.03)	2.93	1.83(1.17)	1.82(1.09)	-
Aggression score ^{a,f}	3.62(2.04)	3.18(1.90)	-	3.85(1.76)	3.14(1.96)	2.62
Impulsivity ^{a,g}	2.70(1.82)	1.87(1.60)	3.58	2.50(1.63)	2.09(1.74)	1.71
Property offense history ^{a,h}	6.79(12.48)	2.78(8.13)	3.09	7.45(12.8)	3.06(10.3)	2.73
Violent offense history ^{a,h}	6.24(14.64)	2.42(6.38)	2.83	4.08(6.36)	2.85(10.6)	-
Seriousness of history ^{a,i}	.47(.60)	.25(.46)	2.52	.47(.61)	.27(.55)	2.57
Never married (%) ^{a,+}	32	50	8.05	46	69	11.71
Previous violent offenses (%) ^{a,+}	29	18	4.33	38	23	5.54

TABLE 1 CONTINUES

TABLE 1 (continued)

Offense/Assessment	Insanity Acquittes (n=253)			Convicted Comparisons (n=210)		
	Recidivism	Not	χ^2	Recidivism	Not	χ^2
Age at time of offense ^a	25.5(7.12)	33.3(14.0)	5.15	26.4(9.06)	33.5(11.4)	5.03
Victim injury ^b	4.62(2.02)	5.00(1.80)	-	4.32(2.16)	4.48(2.10)	-
IQ ^c	101(15.3)	101(16.9)	-	98(18.8)	103(15.0)	2.03
LSI (Modified) ^{d,m}	19.4(9.35)	12.9(7.56)	6.16	18.8(7.92)	13.8(8.07)	4.59
Kazw victim (%)	36	47	-	41	47	-
Female victim (%)	50	51	-	42	53	-
Weapon used (%)	70	80	-	66	72	-
Elevated MMP1 Scale 4 (%) ^e	25	17	-	17	22	-
Alcohol involved (%) ^e	42	27	5.76	64	57	-
Procriminal values (%) ^{e,n}	41	26	6.54	51	26	13.94
Personality disorder (%) ^{e,p}	29	11	12.78	44	34	-

NOTE: For continuous variables, means are accompanied by SD's in parentheses, and under χ^2 are recorded significant t statistics ($df > 150$). For dichotomous variables (indicated by % after the variable name), the numbers recorded under Recidivism and Not are percentages, and the numbers recorded under χ^2 are χ^2 statistics with 1 degree of freedom ($N > 150$). Asterisks indicate variables for which a significant relationship was obtained for violent failure with insanity acquittes, and * indicates variables where significant relationships were obtained for violent failure for the comparison subjects.

- a. Rated on a 4-point scale from 0 (none) to 3 (serious discipline and/or attendance problems).
- b. Rated on a 5-point scale from 0 (never drinks) to 4 (severe impairment due to drinking).
- c. Highest rank order of parents' occupation (according to scale 30) while subject lived at home.
- d. Sum of items endorsed for the 12 problem behaviors noted before age 15 for a DSM-III diagnosis of antisocial personality disorder.
- e. Separation due to divorce, abandonment or institutionalization before age 16.
- f. Rated on a 7-point scale from 1 (no aggression) to 7 (occasional or frequent extreme aggression).
- g. Sum of items endorsed where 1 point was awarded for each of unstable employment, financial irresponsibility, aimlessness, recklessness, promiscuity, aggression, and acting on whims.
- h. Summary of criminal convictions history using Akman and Normandeau scale⁴⁰ for all offenses.
- i. A 3-point scale where 0 corresponds to no previous violent offense, 1 to a previous violent offense, and 2 to a previous violent offense at least as serious as the index offense.
- j. Rated on a 7-point scale from 1 (no injury) to 7 (death with mutilation).
- m. A modification (approximately 20% of the items altered slightly) of the 55-item scale.⁴¹
- n. Dichotomous variable indicating antisocial, procriminal attitudes, values and beliefs.⁴²
- p. Scored using DSM-III criteria and only file information available at admission.

teria for psychosis (schizophrenia, major affective disorder or organic psychosis, 57% vs. 13%, $\chi^2(1) = 99.77, p < .0001$) and less likely to meet the criteria for any personality disorder (22% vs. 41%, $\chi^2(1) = 18.78, p < .0001$).

Prediction of
recidivism

During the average 78.2-month (SD = 50.2) followup period, 253 insanity acquittees and 210 comparison subjects had an opportunity to reoffend (or reoffended even though they had not been at risk).² Of the insanity acquittees at risk, 214 were matched to comparison subjects. Overall, the insanity acquittees yielded a lower rate of recidivism in general (103/253 = 41% versus 117/215 = 54%, $\chi^2(1) = 8.77, p < .01$) and a lower rate of violent recidivism (49/244 = 20% versus 63/214 = 29%, $\chi^2(1) = 5.40, p < .05$). The differences were slightly larger when only matched insanity acquittees were considered (84/214 = 39%, $\chi^2(1) = 9.91, p < .01$ for general recidivism and 40/209 = 19%, $\chi^2(1) = 6.09, p < .05$ for violent recidivism).

Table 1 shows the relationship between each study variable and general criminal recidivism. The relationships between study variables and outcome for the insanity acquittees were almost identical to those for comparison subjects even though the comparison subjects had a higher rate of recidivism. In order to examine the degree to which outcome was related to the same factors in both groups, a relatively strong statistical test was employed; that is, multiple discriminant analyses were employed to determine the linear combination of variables that best predicted outcome for each group. Then that same equation was used to predict outcome for the other group to determine whether a significant proportion of variance could be accounted for.

Hierarchical approaches were used in the construction of the discriminant functions: using stepwise regression for each outcome variable, the four best predictors were selected from each of the three variable sets shown in Table 1. Then the resulting 12 predictors were used in final simultaneous equation to predict general and violent recidivism. For the

construction phase, using the comparison subjects to predict general recidivism, multiple $R = .491$, ($R^2 = .241$), regression $F(12,225) = 5.97$, $p < .0001$. For violent recidivism, multiple $R = .485$, ($R^2 = .239$), regression $F(12,225) = 5.77$, $p < .0001$. Upon cross-validation using the insanity acquittees' multiple R 's were $.311$ ($R^2 = .097$), $p < .001$ and $.251$ ($R^2 = .063$), $p < .001$, respectively. The reverse process, using the insanity acquittees for construction and comparison subjects for validation, yielded very similar results: construction $R = .472$ ($R^2 = .223$), regression $F(12,225) = 5.38$, $p < .0001$, validation $R = .315$ ($R^2 = .099$) for general recidivism and $R = .493$ ($R^2 = .243$), regression $F(12,225) = 6.01$, $p < .0001$, validation $R = .205$ ($R^2 = .042$), $p < .01$ for violent recidivism. Although shrinkage in accounted-for variance occurred in both validations, the amount of shrinkage is approximately what would be expected if true cross-validations had been performed on a random split from a single population.²⁴

Age,
opportunity
and recidivism

Because insanity acquittees spent longer times in custody than their convicted counterparts,²⁵ it was important to ensure that none of the results reported above were compromised by any difference in length of followup. Therefore several subsidiary analyses were conducted.

First, earlier work with the same subjects²⁶ showed that the length of detention was equivalent for subjects charged with homicide and attempted murder, but that among subjects charged with any other offenses, convicted subjects experienced significantly shorter detention than insanity acquittees. Table 2 shows that the differences in outcome between the subject groups were just as large as for those subjects with more serious index offenses (homicide and attempted murder) where there had been no difference in duration of followup.

Second, an examination of the actual lengths of followup showed that there was, overall, an average of 10.1 months longer in followup for the comparison subjects. Consequently for all comparison subjects the length of followup was shortened by 10 months. This meant that only two comparisor

subjects were reclassified. This would have resulted in virtually no change to the results concerning differential rates of recidivism reported above.

TABLE 2 Relative failure rates for insanity acquittees (NGRI) and convicted (Con) subjects

	NGRI	Con	$\chi^2(1)$
<i>Recidivism</i>			
All matched subjects	.393	.544	9.91**
Homicide & attempted murder subjects only	.343	.493	5.09*
Other subjects only	.473	.648	3.88*
<i>Violent Recidivism</i>			
All matched subjects	.191	.294	6.09*
Homicide & attempted murder subjects only	.175	.278	4.73*
Other subjects only	.245	.323	ns

* $p < .05$.

** $p < .01$.

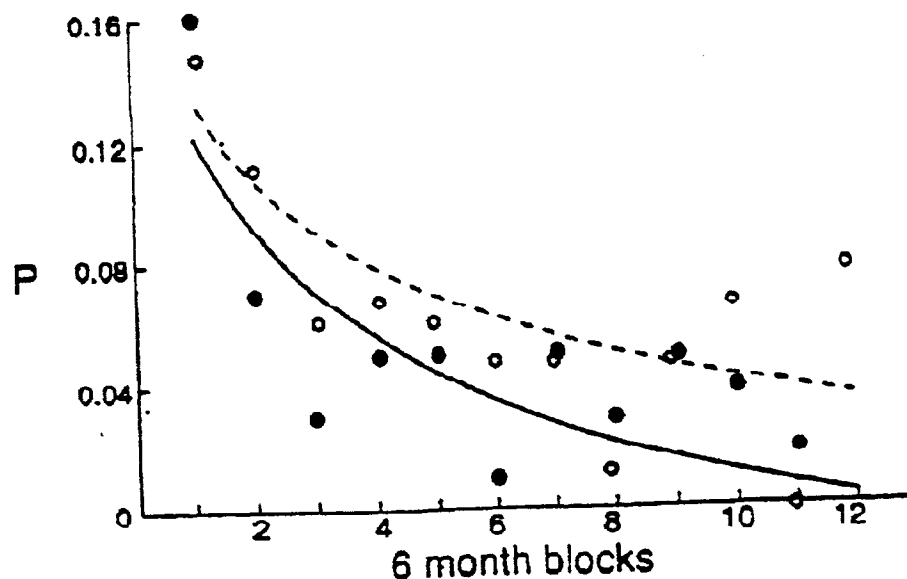
Third, with the two comparison subjects reclassified, the effects of group membership and age on recidivism were examined using a multiple discriminant analysis with group (insanity acquittee or comparison) and age the subject first became at risk as the independent variables and failure (or not) as the dependent variable. The age subjects first became at risk to reoffend had strong relationships with outcome ($F(1,411) = 59.92$ and 20.76 , p 's $< .0001$ for general and violent recidivism, respectively). However, the effect of group membership on outcome was unaltered when the variance associated with age was removed: for general recidivism, $F(1,427) = 8.88$, $p < .005$ before removal vs.

$F(1,411) = 8.96, p < .005$ after, and for violent recidivism, $F(1,421) = 5.64, p < .02$ vs. $F(1,411) = 7.06, p < .01$.

Finally, the probability of recidivism as a function of the length of time at risk was examined for the two subject groups separately. Figure 1 shows the proportion of subjects who exhibited any recidivism (number who failed divided by the number who could have failed) for each of 12 sequential six-month blocks of time at risk to recidivate. Also shown in Figure 1 are the least squares inverse exponential functions that best fit the two data sets. Clearly, the comparison subjects exhibited higher rates of recidivism throughout the followup, and it appears that the difference between the groups increased over time.

FIGURE 1

Probability of general recidivism as a function of six-month time blocks and best fit inverse exponential functions for insanity acquittees (solid points, solid line) and convicted comparison subjects (open points, broken line)



Recidivism,
diagnosis, and
alcohol abuse

As discussed in the introduction, one of the major unanswered questions regarding the recidivism of insanity acquittees has to do with the effect of diagnosis. Although

diagnosis was not reliably related to recidivism in the comparison subjects, diagnoses were significantly different in the two groups of subjects, and those insanity acquittees who were diagnosed as having a personality disorder were more likely to recidivate than those with other diagnoses (see Table 1). Therefore, the role of diagnosis was explored in the prediction of outcome among both groups of subjects combined. Also, because of the large differences between groups on those variables having to do with alcohol abuse, we decided to examine further the role of alcohol and the interaction between alcohol and diagnosis in the prediction of outcome. In order to simplify the analyses, the four alcohol variables were combined into a single composite variable reflecting the severity of each subject's alcohol problem. Subjects received a score from zero to four where one point was added for each of: moderate or severe teen alcohol abuse, moderate or severe adult alcohol abuse, a history of parental alcohol problems, and alcohol involvement in the index offense. Then, alcohol composite score, whether the subject met DSM-III criteria for personality disorder, and group (NGRI or comparison), as well as all possible interactions among these three variables, were examined for both outcome variables using simultaneous and stepwise multiple regression analyses. All yielded main effects of composite alcohol score, $F(1,425) = 33.77$, $p < .001$ and $F(1,419) = 21.28$, $p < .001$, for general and violent recidivism, respectively; and of diagnosis, $F(1,425) = 22.16$, $p < .001$ and $F(1,419) = 26.02$, $p < .001$. Also, group and diagnosis yielded significant interactions, $F(1,425) = 16.36$, $p < .001$ and $F(1,419) = 16.18$, $p < .001$. The same results were obtained when the diagnosis variable was dichotomized as psychotic or not. When group was forced into stepwise solutions first, it was always subsequently forced out by diagnosis.

Although not establishing causal connections, these results suggest that group differences in general and violent recidivism rates could be attributed to differences in degree of alcohol abuse and to the interaction of diagnosis and group.

Specifically, non-personality-disordered (usually psychotic) NGRI subjects showed lower rates of failure than all others. In other words, subjects sent to prison showed about the same rates of failure regardless of diagnosis, and personality-disordered (or nonpsychotic) subjects showed about the same failure rates whether found NGRI or convicted; the only subgroup to show lower rates of failure were NGRI subjects who were not personality disordered (especially those who were psychotic). Figure 2 shows the effects of the interaction of diagnosis and group membership on general recidivism for the dichotomization of diagnosis as personality disordered or not, as psychotic or not. When only the non-personality-disordered subjects were considered, matched insanity acquittees showed lower general recidivism (.33 vs. .50 $\chi^2(1) = 8.74, p < .005$) and violent recidivism (.13 vs. .24 $\chi^2(1) = 6.60, p < .01$) than did convicted subjects.

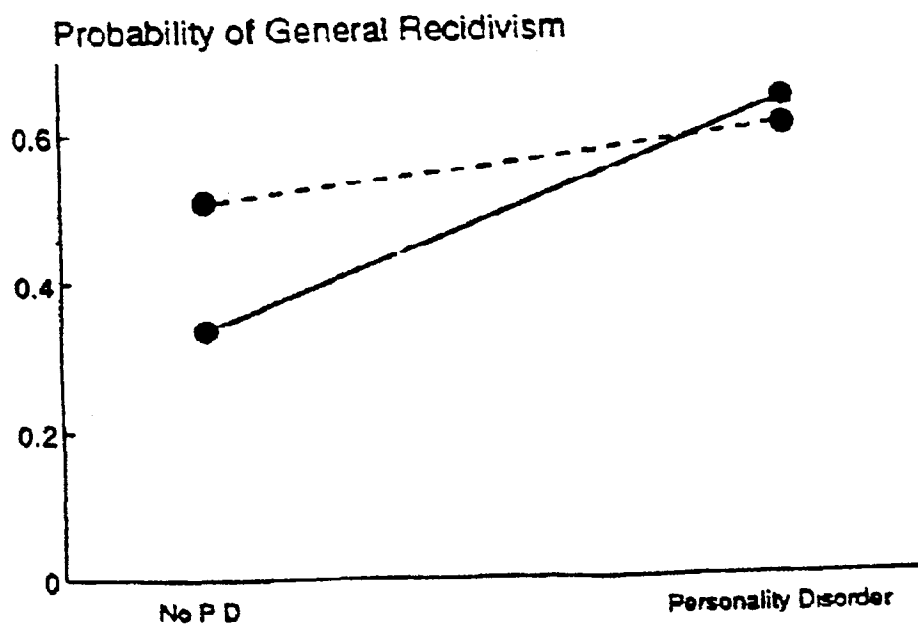
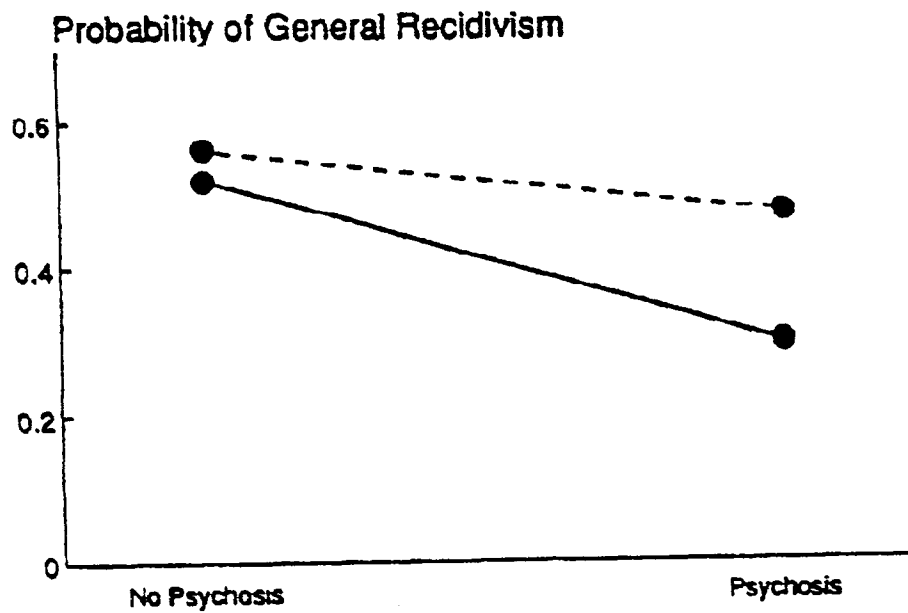
Parenthetically, it should be noted that diagnosis, alcohol composite score and group were not identical variables with different names; they yielded statistically significant but only moderate intercorrelations, shown in Table 3. Finally, the linear combination of alcohol composite score together with diagnosis (psychotic or not) was also not collinear with group, multiple $R = .477$ ($R^2 = .227$), $p < .001$.

Discussion

The results of the present study strongly suggest that insanity acquittees (particularly those who would receive a psychotic DSM-III diagnosis) are less likely than their convicted counterparts to commit any offense or any violent offense upon release. An important strength of this study was that the two groups were carefully matched on variables most consistently related to recidivism in previous studies and were also equivalent on many other clinical, demographic and social adjustment variables. Where the two groups turned out not to be well matched, there was little *a priori* reason to predict that

FIGURE 2

Rates of general recidivism for insanity acquittees (solid line) and matched convicted subjects (dashed line) as function of two diagnostic categorizations



one group was at higher risk to reoffend than the other. Another strength was that recidivism (both general and violent) included acts that, although they could have been pursued through the criminal justice system, were instead handled by readmitting the individual to a secure hospital setting. Nevertheless, none of these factors can account for the difference between our results and those of the studies cited earlier in which the recidivism rates of the insanity acquittees and the matched comparisons were similar.

TABLE 3

Correlations among alcohol composite score and dichotomous group and diagnosis variables

	2.	3.	4.	5.
1. Psychotic	.788	-.500	-.332	.453
2. Schizophrenic		-.394	-.237	.430
3. Personality disordered			.210	-.222
4. Alcohol composite				-.292
5. Group				

NOTE: All correlations significant, $p < .001$.

Why did the recidivism rates of the two groups in our study differ? Several explanations are possible. First, the two groups differed greatly in terms of diagnosis. The insanity acquittees were much less likely to be diagnosed as personality disordered than the comparison subjects. Diagnosis of personality disorder was negatively related to outcome in this study and in several others reviewed in the introduction. Also in support of the argument that diagnosis was the main factor responsible for the differential outcomes of the two groups was the finding that among personality-disordered subjects, there was no significant difference in either outcome measure between the insanity acquittees and the convicted subjects. However, this explanation cannot be com-

plete, for among the subjects who were not personality disordered, the NGRI subjects had significantly lower recidivism rates than the comparison subjects. And, although the three other studies in which the recidivism rates of insanity acquittees and convicted persons were compared did not examine the issue because diagnostic data were not available for the comparisons,²⁷ it is almost certainly the case that diagnostic differences would have been present in those studies as well. Thus it is unlikely that diagnostic differences between groups can explain the present results.

Another explanation of our results relates to differences in post-release supervision. Among convicted offenders, except for those few who had life or indefinite sentences, supervision in the form of mandatory contacts with a parole officer usually ended very shortly after release, and often the amount of contact even while on parole was minimal. By contrast, most of the insanity acquittees, and perhaps especially the non-personality-disordered acquittees, spent a considerable amount of their time at risk living in an open ward of a psychiatric hospital or where they received supervision regarding such criminogenic factors as alcohol use and criminal associates. Moreover, even when the insanity acquittees were living in the community, so long as their legal warrant had not been lifted (and it rarely was), the patient usually had to attend the hospital for regular visits, whereupon, if it was discovered that he was violating any of the conditions of his warrant (which frequently specified that he was not to drink or use street drugs, and was not to associate with certain persons), he could be readmitted to the hospital. Although the personality-disordered patients were also subject to the same conditions, we suspect that they were much less likely to admit to violating them.

Third, the present results are consistent with the suggestion that hospital treatment (plus subsequent clinical supervision, perhaps) as opposed to spending time in prison actually acted to reduce the recidivism of the psychotic patients but not of the personality-disordered patients. One of the measures we

used was the Level of Supervision Inventory.²⁸ In the present study, we found that of all subjects in the study, the convicted psychotic subjects had the lowest LSI scores (12.8 vs. 14.8, 22.5, and 19.6 for the psychotic NGRIs, personality-disordered NGRIs, and personality-disordered convicted subjects, respectively). Thus the finding that among convicted subjects there was no difference in outcome between diagnostic groups despite the differences in risk scores suggests that prison actually increased the risk level of the convicted psychotic patients rather than (or perhaps as well as) that hospitalization lowered the risk level of the psychotic NGRI subjects. Among correctional populations there is evidence that placing low-risk subjects among a group of high-risk subjects can indeed increase the expected recidivism rates.²⁹ Future research could explore these possibilities further by using other established risk assessments and by using more variables relating to response to treatment.

A fourth possible explanation of our findings is that the comparison subjects were a higher-risk group because of their more serious alcohol problems. Compared with the insanity acquittees, convicted subjects were more likely to have parents with alcohol problems, more likely to have abused alcohol in the past, and more likely to have been under the influence of alcohol at the time of their offenses. Although alcohol abuse has been mentioned as a risk factor in the past,³⁰ our results suggest that more attention should be paid to alcohol consumption as a risk factor for both mentally disordered and nonmentally disordered offenders in the future.

Of course, any or all of the explanations above may account for the present results, and further research will be required to determine which are more important. Nevertheless, the fact that our results were different from those of the earlier studies despite similarities in methodology leads us to believe that it was the post-release supervision of the insanity acquittees that led to their lower recidivism rates.

The overall rates of failure for the insanity acquittees (41% for any offense and 20% for a violent offense) were considerably higher than they were for insanity acquittees in an earlier study at the same institution,¹¹ in which similar definitions of failure and similar followup times were employed. However, the mean length of stay until release from a secure hospital setting in the present study was 54.7 months, compared with over 99 months in the earlier study. Thus the men in the present study were considerably younger when first at risk than men in the previous study. This large difference in ages could account for the difference in outcomes, especially for general failure, where age was significantly related to outcome. The reason for the difference in rates of violent failure is less clear. Nevertheless, the failure rates for insanity acquittees in the present study are quite similar to rates obtained in other recent studies.¹²

The variables that predicted both general and violent recidivism in the present study are consistent with those that have been found to predict failure in other studies of criminal recidivism: early arrests, criminal history, alcohol abuse, aggression, impulsivity, school maladjustment, parental separation, parental crime, employment, marital status, a diagnosis of personality disorder, and score on the Level of Supervision Inventory. Moreover, when the equations representing the best combinations of variables in predicting failure and violent failure in each group were cross-validated on the other, the magnitudes of the multiple R's on cross-validation were about as high as would have been expected in a true double cross-validation. In addition, the pattern of results in Table 1 reveals remarkable similarity between the two groups in the ways recidivism was related to each study variable. These findings are important because they lend strong support to the argument that the same variables that predict criminal recidivism among offenders in general also predict criminal recidivism among mentally disordered offenders. These findings are similar to those of several other investigators who have found that variables related to crimi-

nal history are more related to recidivism among mentally disordered offenders than are clinical variables.²¹ These results lend support to those who argue²² that the antisocial behavior of mentally disordered offenders is caused by the same factors that cause crime in nonmentally disordered offenders²³ and that basing the release of insanity acquittees solely on psychopathological symptoms and recovery would be a serious mistake.

Among the best predictors of general failure in the present study was the score on a modification of the Level of Supervision Inventory, an instrument developed to assess risk and needs among correctional populations. Our results strongly support the use of this instrument as a risk predictor for mentally disordered offenders. Furthermore, our results suggest that treatment programs for insanity acquittees must include programs designed to attend to their "criminogenic needs."²⁴ Although it has been argued by some²⁵ that clinicians treating psychotic offenders should attend to the psychotic symptoms and that the violent behavior will then disappear, the present results suggest that clinicians who treat psychotic offenders should address the antisocial behavior directly in treatment. Problems such as substance abuse, criminal thinking, antisocial attitudes and values, and criminal associates have been shown to be relevant treatment targets for correctional populations, and programs designed to address these problems have produced promising results.²⁶ Our data suggest that similar attention to these sorts of problems holds promise for reducing criminal recidivism rates among insanity acquittees.

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